

Claims

1. A motor, comprising:
 - a plastic housing;
 - 5 an inboard bearing supported by the plastic housing;
 - a plastic bracket;
 - an outboard bearing supported by the plastic bracket;
 - a stator interposed between the plastic housing and the plastic bracket;
 - 10 a rotor supported by the inboard bearing and the outboard bearing;
 - a metal bearing retainer engaging the inboard bearing such electrical continuity is established between the rotor and the metal bearing retainer;
 - 15 a bearing retainer fastener that fastens the metal bearing retainer to the plastic housing such that the metal bearing retainer holds the inboard bearing to the plastic housing;
 - a metal ground strap having an attachment end, a terminal end, and a central portion therebetween, wherein the bearing retainer fastener attaches the attachment end to the metal bearing retainer to establish electrical continuity between the rotor and the metal ground strap, and the central portion of the metal ground strap extends between the stator and the plastic housing; and
 - 20 a tie rod that clamps the stator between the plastic housing and the plastic bracket such that the central portion of the ground strap is held in compression between the stator and the plastic housing, whereby the terminal end of the metal ground strap provides a groundable connection to the stator and the rotor.

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2. The motor of claim 1, wherein the tie rod extends through the metal ground strap.
3. The motor of claim 1, wherein the tie rod threadingly engages the plastic housing.

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4. The motor of claim 1, wherein the attachment end and the central portion of the metal ground strap are substantially parallel to each other.

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5. The motor of claim 1, further comprising a crushable curved section on at least one of the plastic housing and the central portion of the metal ground strap, wherein the crushable curved section is resiliently compressed between the stator and the plastic housing.

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6. The motor of claim 1, wherein the plastic housing and the stator define a slot therebetween through which the central portion of the metal ground strap extends, wherein the slot has a depth that is greater than a material thickness of the ground strap yet the central portion of the ground strap is still held in compression between the plastic housing and the plastic bracket.

7. The motor of claim 1, wherein the bearing retainer fastener is a rivet.

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8. The motor of claim 1, further comprising an impeller attached to the rotor, wherein the plastic housing defines a discharge outlet for the impeller.

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9. A motor, comprising:
a plastic housing;
an inboard bearing supported by the plastic housing;
a plastic bracket;
an outboard bearing supported by the plastic bracket;

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a stator interposed between the plastic housing and the plastic bracket;
a rotor supported by the inboard bearing and the outboard bearing;
a metal bearing retainer engaging the inboard bearing such electrical continuity is
established between the rotor and the metal bearing retainer;

5 a bearing retainer fastener that fastens the metal bearing retainer to the plastic
housing such that the metal bearing retainer holds the inboard bearing to the plastic
housing;

10 a metal ground strap having an attachment end, a terminal end, and a central
portion therebetween, wherein the bearing retainer fastener attaches the attachment end to
the metal bearing retainer to establish electrical continuity between the rotor and the metal
ground strap, and the central portion of the metal ground strap extends between the stator
and the plastic housing;

15 a crushable curved section borne by at least one of the plastic housing and the
central portion of the metal ground strap; and

20 a tie rod that clamps the stator between the plastic housing and the plastic bracket,
wherein the tie rod extends through the central portion of the ground strap such that the
crushable curved section is held in compression between the stator and the plastic housing,
whereby the terminal end of the metal ground strap provides a groundable connection to
the stator and the rotor.

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10. The motor of claim 9, wherein the tie rod threadingly engages the plastic housing.

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11. The motor of claim 9, wherein the attachment end and the central portion of the
metal ground strap are substantially parallel to each other.

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12. The motor of claim 9, wherein the plastic housing and the stator define a slot
therebetween through which the central portion of the metal ground strap extends,

wherein the slot has a depth that is greater than a material thickness of the ground strap yet the central portion of the ground strap is still held in compression between the plastic housing and the plastic bracket.

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13. The motor of claim 9, wherein the bearing retainer fastener is a rivet.

10 14. The motor of claim 9, further comprising an impeller attached to the rotor, wherein the plastic housing defines a discharge outlet for the impeller.

15 15. A motor, comprising:
a plastic housing;
an inboard bearing supported by the plastic housing;
a plastic bracket;
an outboard bearing supported by the plastic bracket;
a stator interposed between the plastic housing and the plastic bracket, wherein the plastic housing and the stator define a slot therebetween;
20 a rotor supported by the inboard bearing and the outboard bearing;
a metal bearing retainer engaging the inboard bearing such electrical continuity is established between the rotor and the metal bearing retainer;
a rivet that fastens the metal bearing retainer to the plastic housing such that the rivet holds the inboard bearing to the plastic housing;
25 a metal ground strap having an attachment end, a terminal end, and a central portion therebetween, wherein the rivet attaches the attachment end to the metal bearing retainer to establish electrical continuity between the rotor and the metal ground strap, wherein the central portion of the ground strap extends through the slot that is between the plastic housing and the stator;

a crushable curved section borne by the central portion of the metal ground strap, wherein the slot that is between the plastic housing and the stator has a depth that is greater than a material thickness of the ground strap yet the central portion of the ground strap is still compressed between the plastic housing and the plastic bracket;

5 a tie rod threadingly engaging the plastic housing to clamp the stator between the plastic housing and the plastic bracket, wherein the tie rod extends through the central portion of the ground strap such that the crushable curved section is held in compression between the stator and the plastic housing, whereby the terminal end of the metal ground strap provides a groundable connection to the stator and the rotor; and

10 an impeller attached to the rotor for moving air, wherein the plastic housing defines a discharge outlet for the impeller.

16. The motor of claim 15, further comprising an airguide that directs the air from the 15 impeller to the plastic housing, wherein the rivet further fastens the airguide to the plastic housing.

17. A motor, comprising:

20 a plastic housing;
an inboard bearing supported by the plastic housing;
a plastic bracket;
an outboard bearing supported by the plastic bracket;
a stator interposed between the plastic housing and the plastic bracket, wherein the 25 plastic housing and the stator define a slot therebetween;

a rotor supported by the inboard bearing and the outboard bearing;
an impeller attached to the rotor for moving air, wherein the plastic housing defines a discharge outlet for the impeller.

30 a metal bearing retainer engaging the inboard bearing such that electrical continuity is established between the rotor and the metal bearing retainer;

1 a bearing retainer fastener that fastens the metal bearing retainer to the plastic housing such that the metal bearing retainer holds the inboard bearing to the plastic housing;

5 a metal ground strap being an integral extension of the metal bearing retainer, whereby the metal ground strap and the metal bearing retainer are a unitary piece to maintain electrical continuity therebetween; and

10 a tie rod that clamps the stator between the plastic housing and the plastic bracket such that a portion of the metal ground strap is held in compression between the stator and the plastic housing, whereby the metal ground strap provides a groundable connection to the stator and the rotor.

15 18. The motor of claim 17, wherein the bearing retainer fastener is one of two bearing retainer fasteners that lie along a first line, and the tie rod is one of two tie rods that lie along a second line that is substantially perpendicular to the first line.

20 19. The motor of claim 17, further comprising an airguide that directs the air from the impeller to the plastic housing, wherein the bearing retainer fastener further fastens the airguide to the plastic housing.